

CLAIMS

What is claimed is:

1. A method for reducing gaseous contamination in a pressure vessel, comprising:

- 5 (a) providing a getter as an integral part of said pressure vessel;
 (b) evacuating said pressure vessel;
 (c) activating said getter;
10 (d) filling said pressure vessel with a gas of choice; and
 (e) sealing said pressure vessel, wherein said getter has sufficient sorption capacity to adsorb gaseous contaminants and has negligible sorption capacity for
15 said gas of choice.

2. The method of claim 1, wherein said pressure vessel is a cryocooler and said gas of choice is a working gas.

20 3. The method of claim 2, wherein said working gas is helium.

4. The method of claim 1 or 2, wherein said getter is activated by passing an electrical current through an internal heater.

25 5. The method of claim 1 or 2, wherein said getter is contained in an appendage that is an integral part of said pressure vessel.

6. The method of claim 5, wherein said getter is activated by heating with an external heater.

30 7. The method of claim 1 or 2, wherein said getter is in the form of an appendage getter pump that is an integral part of said pressure vessel.

8. The method of claim 7, wherein said getter is activated by heating with an external heater.

35 9. The method of claim 1 or 2, wherein said getter is a zirconium alloy.

10. A method for reducing gaseous contamination in a pressure vessel containing a gas of choice, comprising providing a getter as an integral part of

said pressure vessel, wherein said getter has sufficient sorption capacity to adsorb gaseous contaminants and thereby eliminates the need for a bakeout cycle and wherein said getter has negligible
5 sorption capacity for said gas of choice.

11. The method of claim 10, wherein said pressure vessel is a cryocooler and said gas of choice is a working gas.

12. The method of claim 11, wherein said working
10 gas is helium.

13. The method of claim 10 or 11, wherein said getter is activated by passing an electrical current through an internal heater.

14. The method of claim 10 or 11, wherein said
15 getter is contained in an appendage that is an integral part of said pressure vessel.

15. The method of claim 14, wherein said getter is activated by heating with an external heater.

16. The method of claim 10 or 11, wherein said
20 getter is in the form of an appendage getter pump that is an integral part of said pressure vessel.

17. The method of claim 16, wherein said getter is activated by heating with an external heater.

18. The method of claim 10 or 11, wherein said
25 getter is a zirconium alloy.

19. A method for reducing remaining gaseous contamination in a pressure vessel containing a gas of choice, said pressure vessel having undergone an incomplete outgassing bakeout step, comprising
30 providing a getter as an integral part of said pressure vessel, wherein said getter has sufficient sorption capacity to adsorb remaining gaseous contaminants and has negligible sorption capacity for said gas of choice.

20. The method of claim 19, wherein said pressure
35 vessel is a cryocooler and said gas of choice is a working gas.

21. The method of claim 20, wherein said working gas is helium.

22. The method of claim 19 or 20, wherein said getter is activated by passing an electrical current
5 through an internal heater.

23. The method of claim 19 or 20, wherein said getter is contained in an appendage that is an integral part of said pressure vessel.

24. The method of claim 23, wherein said getter
10 is activated by heating with an external heater.

25. The method of claim 19 or 20, wherein said getter is in the form of an appendage getter pump that is an integral part of said pressure vessel.

26. The method of claim 25, wherein said getter
15 is activated by heating with an external heater.

27. The method of claim 19 or 20, wherein said getter is a zirconium alloy.

28. A pressure vessel containing a gas of choice, comprising, as an integral part of said
20 pressure vessel, a getter that (a) has sufficient sorption capacity to adsorb gaseous contaminants without the necessity of an outgassing bakeout step and (b) has negligible sorption capacity for said gas of choice.

29. The pressure vessel of claim 28, wherein said
25 pressure vessel is a cryocooler and said gas of choice is a working gas.

30. The pressure vessel of claim 29, wherein said working gas is helium.

31. The pressure vessel of claim 28 or 29,
30 wherein said getter is contained in an appendage that is an integral part of said pressure vessel.

32. The pressure vessel of claim 28 or 29,
35 wherein said getter is in the form of a appendage getter pump that is an integral part of said pressure vessel.

33. The pressure vessel of claim 28, wherein said getter is a zirconium alloy.

34. The cryocooler pressure vessel of claim 31,
wherein said getter is a zirconium alloy.

35. The cryocooler pressure vessel of claim 32,
wherein said getter is a zirconium alloy.

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